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The institute was designed to provide industrial arts teachers with updating experiences in fluid power education. It had four educational phases: technical instruction, directed field experiences, teaching strategies, and professional development. The latter involved meeting with participants in two other institutes. Twenty-one participants were selected from 360 applicants. Evaluation data collected from the participants indicated a high degree of satisfaction with the program. The evaluation instrument and participant list are included. A related document is VT 008 184. (EM)

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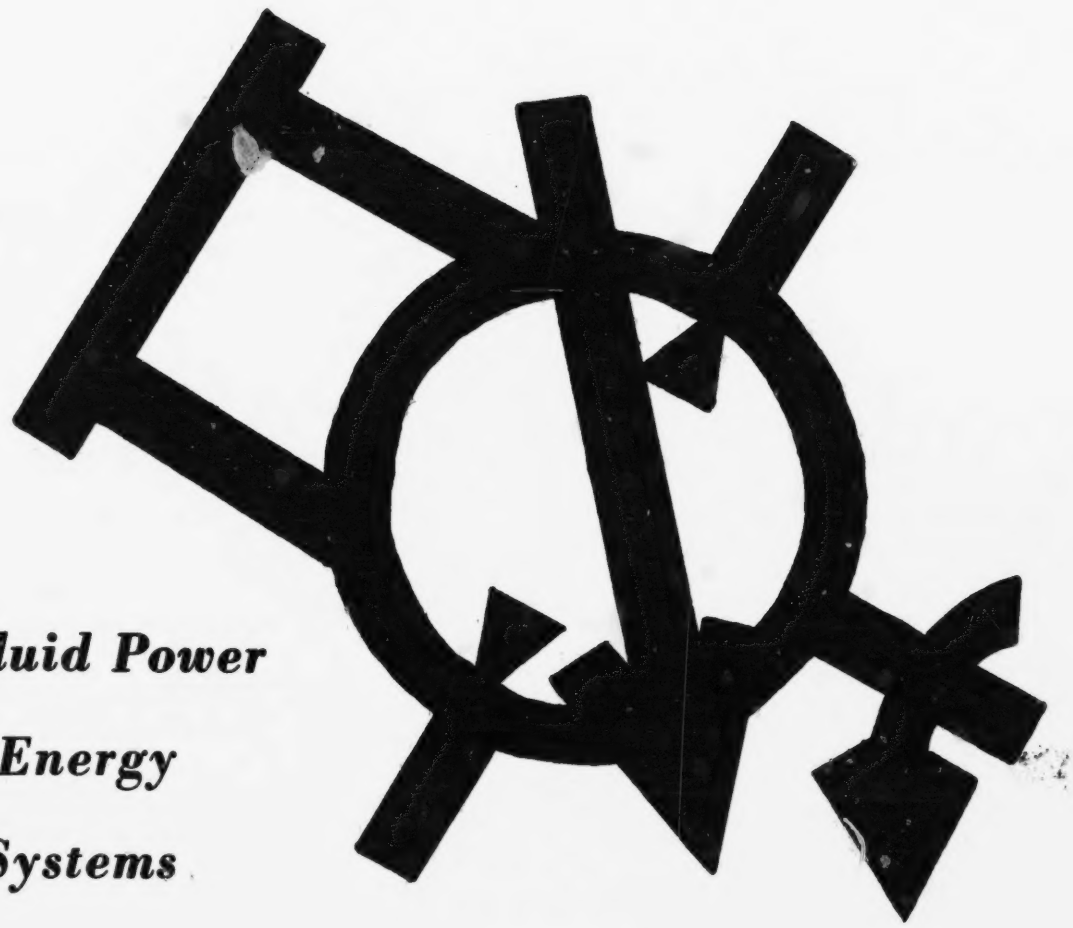
NDEA INSTITUTE FOR ADVANCED STUDY IN INDUSTRIAL ARTS

Final Report



Integration of Fluid Power Instruction Into Energy and Propulsion Systems

VT008185

SIX WEEKS JUNE 24 TO AUGUST 2, 1968

WAYNE STATE UNIVERSITY
DETROIT, MICHIGAN 48202

IN COOPERATION WITH THE U.S. OFFICE OF EDUCATION,
AS AUTHORIZED UNDER TITLE XI OF THE NDEA, AS AMENDED

U.S. DEPARTMENT OF HEALTH, EDUCATION & WELFARE
OFFICE OF EDUCATION

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FINAL REPORT

1968 NDEA INSTITUTE

Department of Industrial Education
Wayne State University
Detroit, Michigan 48202

Submitted by:

Dr. G. Harold Silvius
Project Director

June 24 - August 2

FINAL REPORT,

1968 NDEA INSTITUTE

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and

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Under the Direction of:

Dr. G. Harold Silvius
Project Director

ACKNOWLEDGMENTS

This report is based on the 1968 Summer NDEA Institute at Wayne State University which was supported by the U.S. Office of Education, as authorized under Title XI of the National Defense Education Act. The Institute was designed to strengthen the background of twenty-four teachers in fluid power technology.

Focus was placed on technical and professional instruction at the University with a series of field trips to industry which illustrated practical applications of fluid power technology. As a result of this technical instruction, field experiences, laboratory activities, and professional seminars, it was possible for the participants to develop instructional material for their own classroom situations.

The experience and knowledge of the following personnel connected with the Institute contributed to its success.

Dr. G. Harold Silvius, Director

Leslie H. Cochran, Associate Director

Dr. William D. Wolansky, Curriculum Specialist

John Nagohosian, Instructor

William F. Gayde, Instructor

Kenneth McLea, Industrial Coordinator

Credit is also extended to the participating industries and resource personnel that contributed to the success of this Institute.

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PART I

THE PLAN FOR THE INSTITUTE

Program Description

This Institute focused on one of the four major occupational job clusters, namely, Energy and Propulsion Systems,[1] with particular attention on fluid power, a technology which is finding increasing applicability throughout the nation. The modifications and innovations advocated were based on shifting the emphasis from a specific occupational preparation to a broad based technological approach. This calls for having the evolving technologies introduced into industrial arts programs, at the secondary level, to more adequately meet the needs of youth, especially those who reside in the great urban areas. The program for the institute was designed to provide teachers with specific instructional experiences to update their preparation in fluid power.

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[1]This is one of the four broad occupational clusters in the Detroit Galaxy Plan for Career Preparation where vocational curricula for youth who live in urban areas are organized under four divisions of the World of Work namely (1) Industrial Materials and Processes, (2) Energy and Propulsion Systems, (3) Visual Communication, and (4) Personal Services. It has been assumed by those advocating the Galaxy Plan for Career Development that any entry now found in the Dictionary of Occupational Titles could be broadly classified under one of these four occupational clusters. A bulletin, describing the Detroit Galaxy Plan, as it is being promulgated in junior and senior high schools, may be secured upon request from Carl H. Turnquist, Divisional Director of the Department of World of Work Education - Vocational Education, Detroit Public Schools, Detroit 48202.

Objectives

To make it possible for teachers to become competent to teach these aspects of modern industry, the following objectives were identified:

1) To provide science oriented technical content in fluid power instruction.

2) To provide practical laboratory experiences in energy and propulsion systems through the utilization of modern laboratory equipment.

3) To provide industrial contacts and experiences through a directed and intensified field experience in cooperating fluid power industries.

4) To develop and field test, through micro-teaching and other instructional methods, those teaching materials that are now needed in comprehensive high schools to introduce fluid power instruction as an integral part of energy and propulsion systems.

5) To identify and become familiar with available instructional materials, laboratory equipment, and the sources for the further development of such hardware.

Formal Program

The Institute program consisted of four integrated parts:

1) Technical Instruction: This included the content of fluid power technology as it relates to the Energy and

Propulsion job cluster within the Galaxy Plan. This portion of the program was conducted through lectures, demonstrations, laboratory experiments, discussions, and group study.

Subject matter units stressed and studied included:

a) Energy conversion and transmission.
b) Physical laws as they relate to power systems.
c) Power devices and hardware.
d) Motors, pumps, and controls.
e) Actuators and circuitry.
f) Instrumentation.
g) Maintenance and repair.

These topics were studied and analyzed in terms of their applicability for a high school instructional program and as an integral part of energy and propulsion systems.

2) Directed Field Experience. This provided for intensive industrial field experiences in fluid power industries, and involved field trips to Pontiac Motors, Ford Sterling Plant, Vickers A and E Center, Joseph Lamb Company, General Motors Diesel, and Ford Engine Plant.

3) Teaching Strategies. This phase of the program was concerned with the development, evaluation, and utilization of needed instructional materials. This was achieved through seminar discussions and study groups. Such methods as micro-teaching, programed instruction, and team teaching were employed. Needed instructional materials for implementing the program upon return to the home schools of the Fellows, were developed concurrently. To assist the participants in

introducing fluid power, a "Take Home Package" was developed which was planned to fulfill the following goals:

a) Develop plans for a term, with units devoted to fluid power instruction as an integral part of energy and propulsion systems.

b) Review and evaluate texts, reference materials, audio-visual materials, and laboratory equipment essential for such instruction.

c) Plan a laboratory layout for existing or new facilities.

4) Professional Development. The participants were introduced to innovative strategies in instructional technology, designing a model power program, and teaching practices in industrial education for preventing dropouts. Participants also had the opportunity to attend a Tri-Institute Meeting at Eastern Michigan University devoted to "Man and Technology", with Fellows from the NDEA Institutes in industrial arts at Western Michigan, Eastern Michigan, and Wayne State Universities in attendance.

Pre-Program Activities

The planning of the operational program started with the acknowledgement of the Institute. Following the Directors' Conference in Washington, D.C., necessary publicity was prepared and distributed. In addition to the common mailing for Industrial Arts Institutes through the American

Industrial Arts Association, brochures were sent to State Departments (Industrial Arts Division); Industrial Teacher Education Institutions; directors and supervisors in urban school centers; local department heads and teachers; professional journals, and selected members of the Fluid Power Society.

The Directors' Meeting was particularly helpful to the director and associate director as it provided immediate direction, facilitated an exchange of ideas, and provided personal contacts with the directors of institutes in industrial arts education. It was also during this meeting that agreement was reached on distribution procedures for the Institute announcement. Experience indicates that only twenty-five percent of the selected participants were informed about the Institute through the AIAA mailings. It would appear that the eighty percent of the total brochures, distributed through AIAA, did not reach potential applicants in the inner-city school systems. Therefore, it has been concluded that it would be more desirable to use other and more direct communication procedures for such programs focused on meeting the needs of inner-city teachers.

Criteria for Selection

Teachers from all sections of the United States were encouraged to apply and were evaluated against the following criteria: 1) educational background, 2) teaching

experience, 3) teaching commitment, 4) recommendations, and 5) communication skills.

Figure 1 illustrates the overall distribution of applicants for the Institute. Of the 360 potential applicants twenty-four were initially selected by the Institute staff. The final selection was based on information supplied by U.S. Office of Education application forms, the publicized criteria, and an autobiographical statement. This required statement of personal goals and experience was particularly valuable in determining the applicants potential. Specifically, attention was given to:

a) Potential for teaching and leadership in urban schools.

b) Nature and extent of teaching experience.

c) Skills in communication.

Operational Plan

Developing the operational plan well in advance of the Institute greatly facilitated the success of the program. Although this pre-planning required considerable time and effort on the part of the directors, the advantages of a structured program compensates for the early effort. This made it possible to arrange for a coordinated series of field trips, special lecturers, and industrial consultants.

The U.S. Office of Education was most helpful in assisting with the development of the structured program.

Figure 1 -- Distribution of Applicants for the Institute

Personnel from the USOE provided ideas, suggestions, and guides for program development. Their assistance with the budgeting aspects were most prompt, specific, and constructive.

The operational plan, developed cooperatively by the staff, was designed to meet the overall objectives of the Institute and provided each staff member with an overview of daily sessions, specific assignments, and project responsibility. This plan facilitated coordinated efforts by all staff members and provided the participants a knowledge of the sequence of activities.

PART II

EVALUATION

Program Relations

The success of a program depends upon constructive relationships existing among all personnel and participants associated with the project. With this in mind a concerted effort was made by the directors to plan and coordinate effectively all of the activities of the program.

U.S. Office of Education

Beginning with the Directors' meeting and continuing throughout the duration of the project, the immediate and helpful support by personnel from the USOE contributed to the success of the total program. To illustrate, the copy for the brochure was reviewed, suggestions were made, and approvements made in the shortest time possible. This effective and quick response provided greater lead time to notify participants about the Institute. The Washington D.C. briefing session for the Directors proved to be very valuable in terms of needed planning for the selection of participants, the operation of the program, and formulating the budget for the Institute. The approval and notification of the acceptance of the proposed program and budget by the U.S. Office of Education also facilitated further the pre-planning activities and operational limits of the total effort. It was the feeling of the Directors, and the staff

that the assistance and cooperation provided by personnel in the USOE was most satisfactory and constructive.

University Administration

As a result of conducting previously funded research projects, the university administration and the departmental staff were better equipped to run this Institute. For example, the administration was very receptive to providing adequate office space for the instructional staff and secretary, as well as classroom space. A laboratory assistant was assigned also by the Office of the Dean, as a WSU contribution to the operation of the program. His responsibilities included laboratory set-ups, operation of instructional media, general maintenance, and other operational details.

Lines of communication for conducting funded research projects were improved as a result of previous experience. Such items as budget, accounting, personnel designated with specific responsibilities, and the chain of command have been clarified. These improved conditions helped the Directors in the operation of the Institute.

The previous experience in conducting summer institutes and an Experienced Teacher Fellowship Program enabled the staff to be more realistically appraised of the problems and procedures within the University structure. This experience contributed to better planning, coordinating, operating, and

and refining of the program.

Participants

Several methods of appraisal were used to obtain the reaction of the participants in respect to the organization and operation of the institute. The formal evaluation by the participants was accomplished by means of three structured sessions. These special periods were scheduled during the first, fourth, and sixth weeks. During each of these sessions, the participants were invited to complete a reaction instrument and then to informally discuss pertinent issues. The instruments were designed to include such aspects as orientation, organization, technical and professional instruction, outside activities, and other related areas. The instruments are included in Appendix C.

From these data acquired through these instruments it was observed that there was considerable improvement in the majority of categories as the institute progressed. For example, on a five point scale the basic organizational structure was rated at 3.7 during the midterm evaluation, while it received a 4.7 rating in the final session. Significant improvements were also noted in such areas as quality of instruction, applicability of content, type of presentations, and the interest of the staff as the program unfolded.

In addition to the formal sessions there were numerous informal meetings with the participants. Such discussions and interaction with participants frequently provided the staff with an opportunity to assess the acceptance of what was being done. Arrangements were made also for office conferences with individuals and groups, dormitory meetings, and social functions.

The open dialogue and close relationships between the staff and participants was evidenced by numerous professional and social contacts. In addition to regular classroom activities those associated with the program actively participated in group outings, picnics, tours, parties, sports, and the final banquet.

Program Operations

This section of the report includes the evaluation of the orientation session, the formal program, and the unique features.

Orientation Session

The formal program began with an orientation session at which time the Dean officially welcomed the group to the campus. Other items of business included in this session were: the presentation of program objectives and outline, staff introductions, and an opportunity for getting acquainted with the staff and other participants.

The reactions of the participants to the orientation

session were very favorable. On the five point scale the participant ratings ranged from 4.0 to 4.8 on all factors under consideration. Their general comments also reflected satisfaction with the organizational aspects of the program.

The Formal Program

The instructional program included technical and professional instruction and industrial contacts. The technical phase of the institute included group instruction by the project staff, guest speakers, and industrial consultants. A pre-test was administered to the participants to determine their technical competence in technologies related to fluid power instruction. With these results and the post-test it was possible to determine the gain in knowledge acquired in the technical aspects of the Institute.

The staff evaluation concluded that there was considerable growth and proficiency acquired in the technical subject matter stressed in the program. This technical competence was enhanced through industrial contacts, laboratory experiences, and assignments.

From the participants point of view, technical instruction was rated quite favorably. The final reaction instrument indicated that the quality of instruction, and presentation of this subject matter, was rated at 4.4 on the five point scale. Comments made by participants at the final evaluation session reflected their satisfaction with

this phase of the program; with the majority indicating that the technical instruction was excellent.

Emphasis in this program was also placed upon the development of a course outline and the identification of resource materials to assist these teachers in introducing or improving a fluid power program. This effort resulted in the development of the "Take Home Package".

Developing resource materials while acquiring technical competencies appears to be a logical approach to introducing emerging technologies. It provided also the participants more meaning and motivation for mastering the technical information as they analyzed and organized the content for specific levels of instruction in their home teaching situations. The quality of instruction and the professional seminar was rated by the participants as 4.2 on a five point scale.

The third aspect of the formal program was the provision for field trips to selected Detroit area industries. These industries were chosen because of their diversity in fluid power applications. These field trips were greatly appreciated by the participants. The technical guides that were utilized made it possible for small group tours so the participants could ask specific questions and discuss technical issues. Provision was also made for the participants to meet with engineering and management personnel

after the tour for further technical discussions.

It is the judgement of the project staff that field trips can be made meaningful and an integral part of the instructional programs provided when the plants to be visited are carefully selected, appraised of the purpose of the tour, and conducted with technical guides on a small group basis. The rating of the seven field trips ranged from 4.0 to 4.9 with five of the trips receiving a rating of 4.7 or higher.

Unique Features

This summer Institute at WSU in fluid power differed from the previous ones in several respects. First, the teachers selected were more homogenious in respect to their specialization and teaching backgrounds. The uniqueness of this selection enabled the program to be geared specifically to the teaching of fluid power, as a part of energy and propulsion systems, at the secondary level.

Another feature of this institute was the involvement of a greater number of staff members. This provided for greater flexibility in the employment of staff strengths to provide optiminum instruction. For example, one staff member was responsible for field trips and industrial contacts, another coordinated professional phases of the Institute, two were responsible for the technical instruction on a

team teaching basis while the Directors assisted with the overall instructional program.

Consultants from industry were carefully selected to present topics at the cutting edge of fluid power technology. The amount of support and cooperation provided by local industries contributed much to the participant's knowledge and experiences. The contacts that the participants made with representatives from industry were equally valuable to them. For example, several teachers were invited to return to the plants for further instruction, and in several cases industry has offered to assist the teachers by providing components and literature for instruction in their home schools.

The success of an Institute, even with the full support of administration and industry, fails to satisfy its objectives unless provision is made for teachers to implement curriculum change as they return to their school. To insure that the teachers would make an effort to implement the newly acquired knowledge, the "Take Home Package" was developed. This package had a twofold purpose: (1) To be used for promotional purposes with administrators in introducing fluid power instruction or expanding it in their schools and, (2) To provide the teacher with a course outline and resource materials for introducing or further developing fluid power instruction.

Instructional Staff and Facilities

To meet the objectives established for the program it was necessary to have the experienced staff and supporting personnel, as well as suitable physical facilities.

Instructional Staff

The selected staff for this institute included regular Departmental staff members, lecturers from other institutions, and consultants from industry. The Director Dr. G. Harold Silvius, and the Associate Director, Leslie H. Cochran, served in the capacity of administering the program, but more importantly were directly involved in the regular instructional sessions and evaluation aspects. Dr. Silvius, for example, cooperatively presented materials on a team teaching basis with Dr. William D. Wolansky in the professional seminar. Mr. Cochran conducted the orientation session and the concurrent evaluation sessions. As a part of his instructional responsibilities, Mr. Cochran also coordinated and counseled participants in their scheduled activities.

The technical and professional instruction was coordinated by a team headed by Dr. Wolansky and William F. Gayde. They were assisted by John Nagohosian who was involved in the technical presentations, and Kenneth R. McLea, who coordinated plant tours and visitors from industry and

other institutions.

The previous experience of the directors and staff in handling similarly funded projects greatly facilitated planning, coordinating, and carrying out the operations of the Institute. The experiences gained from previous Institutes and an Experienced Teacher Fellowship Program aided the staff in insuring maximum involvement of the participants, as well as the realistic attainment of the established objectives. It is the staff's conviction that a criterion for refunding future institutes be based on the qualifications and experience of the staff in respect to running special projects.

The optimum ratio of staff to participants provided for maximum involvement and attention to individual responsibilities. Within the team each staff member had specific responsibilities for which he was best qualified, and the efforts of this team were coordinated by the Directors. By the same token the participants had ample opportunity to have individual conferences with instructors regarding problems.

Instructional Facilities

An air-conditioned laboratory was provided for the exclusive use by the participants. This facility was equiped with all the major fluid power laboratory equipment and necessary components. The most recently developed fluid

power equipment was brought in on a rental loan basis for use by the participants.

Provision was made to have this laboratory open during the evenings so the participants could experiment with demonstrators and hold small group buzz sessions. This provision was considered to be important since it provided equal opportunity for those who were not initially as familiar with such technical equipment.

The Department of Industrial Education, through its John Herman Trybom Collection, has established a very extensive collection of resource materials in the area of fluid power. This collection, along with material from the personal libraries of staff members, was made available to the participants.

Housing was provided in the immediate area to the College of Education. Twelve of the participants and the Associate Director lived in the Helen Newberry Joy Residence. The remaining participants along with their families were housed in several locations in the city. Those living in the dormitory benefited from numerous informal sessions and discussions. The non-residents of the dormitory participated in many of these sessions.

During intensive programs, such as this NDEA Institute, it is considered essential to have several scheduled social functions. These functions tend to create group identify and cohesiveness. The reactions of the participants to the

physical arrangements were very positive.

The field trips to industrial plants and other institutions also contributed to the participants awareness of fluid power application and laboratory layouts. Supplemental activities arranged through the field trips were exceptionally well received by the participants.

The Program in Retrospect

The degree of success that was attained in this program was due largely to the close coordination of the technical, professional, and the industrial experiences. The attention given to the development of the operational plan made it possible to have the necessary structured organizational schedule. This schedule of activities was made available to all participants, staff, and guest lecturers. In this manner those associated with the project were appraised of the total instructional program. Consequently each member of the instructional team prepared his presentations so as to contribute to the overall objectives. With the participants having knowledge of the total program, it was possible to identify their strengths and weaknesses, and to involve them more effectively in the program.

Program Strengths

The most obvious strength of the institute was the excellent cooperation of industries in the area with the University. Coupled with this was the close coordination

of the technical and professional instruction. Under these conditions the participants were able to develop their technical competence as a result of technical instruction, laboratory experiences, and observations of industrial applications. As a result of this newly acquired technical background the participants were prepared to develop the necessary instructional resources for implementing fluid power in their schools. The "Take Home Package" that was developed will undoubtedly be helpful to other high school teachers now interested in introducing fluid power instruction.

Another strength of the program was the provision for enabling these selected teachers and their families to study and spend a period of time in a large industrial metropolitan center like Detroit. The industrial tours had a broadening effect on the participants. Beyond the technical aspects, the participants benefited from observing the organizational, administrative, occupational, and social implications of modern industry. These experiences should contribute to insights in coping with the educational problems of urban youth.

Provision was also made for the group to take advantage of the cultural and social opportunities available in Detroit. To illustrate, several attended the annual Convocation Lecture Series, and visited Cranbrook Institute of Science, Greenfield Village, the Detroit Art

of this nature could, therefore, be planned with a more critical selection procedure to insure a reasonably homogenious group of teachers. If this is not possible, then provision should be made for more individualized instruction.

One of the tendencies of institute programs is to place considerable emphasis on the acquisition of new technical content. It is suggested that future institutes of a technical nature be organized with blocks of time allocated to a maximum of two hours with preferably an interviening session devoted to professional skills in curriculum development.

To make the benefits of the Institute more readily available to the teaching profession it will be necessary to focus on two major considerations: (1) At the conclusion of each institute specific curriculum materials developed should be made available to the participants. It is essential that such materials be completed prior to the termination of the project, since other obligations lead to conflict with the participants intent to do so. (2) Funds should then be made available to publish and disseminate such materials when the demand warrants publication.

Museum, and the Fisher Theatre.

Suggestions for Improvement

Based on experiences of running this and previous institutes, the staff has observed that some modification would strengthen future institutes. More specifically, these changes relate to the problems of inner-city recruitment, homogenious grouping, time allocations, and implementation of new acquired knowledge and skills.

The difficulty encountered in reaching and attracting applicants from inner-city centers needs to be dealt with more effectively. There are two immediate ways in which this might be accomplished: (1) There needs to be a listing of all inner-city schools by the U.S. Office of Education so that this listing could be made available to all institute directors; and (2) there is need for annual workshops to be scheduled for supervisors and consultants from urban centers to appraise them on institutes funded in their particular subject area.

While the participants selected for this Institute were more homogenious in character than in previous institutes at WSU, there were still considerable spread represented in their technical competence and background. This diversity poses a problem when the instructional program is focused on developing technical competency in an evolving technology such as fluid power. Future institutes

Part III

CONCLUSION

The success of a program of this nature depends to a large extent on the cooperation and support of the U.S. Office of Education, University Administration, project staff, and the participants. This relationship was prevelant throughout the institute.

The program was organized in a manner enlisting cooperation of consultants from industry, visiting lecturers from other institutions, and project staff. The specific responsibility, the spirit and effort of each team member contributed significantly to the success of the Institute. There was a feeling of unity among the staff members which also contributed to the successful operation of the program.

The employment of experienced staff made it possible for them to conduct the instructional program at a meaningful pace and to develop the teacher's confidence in mastering the technical content and skills. Having had previous experience in similar institutes, both the Directors and staff were familiar with the basic problems and were prepared to deal with these problems.

A concomitant of the Institute was the participants involvement in a Tri-Institute Meeting when Dr. Paul DeVore spoke on "Man and Technology". His topic dovetailed well

with the major themes for the institute at WSU and was interesting and thought provoking for these experienced teachers.

The selected participants developed a cohesiveness early in the program and worked in small groups on an individual basis to fulfill their responsibilities. The evaluative instruments reflected significant growth and development in the acquisition of technical knowledge and the preparation of essential instructional materials. Their attitude toward sharing the responsibilities and getting the tasks completed were very positive. Visiting lecturers and consultants from industry commented on the participants' enthusiasm and sense of inquiry. With this attitude and professional dedication the participants did successfully fulfill the expectations of the program.

The number of applicants, the interest of the participants, and the interest exhibited by other teachers in fluid power suggests that future institutes should be funded in this area. With the current curriculum concerns for the evolving technologies in industrial education there is great need for similar institutes that provide opportunity for practicing teachers to take advantage of Summer institute instruction. Conceivably an institute with qualified staff, could conduct two institutes to increase the chances for updating teachers.

APPENDIX A: THE PARTICIPANTS

APPENDIX B: EXHIBITS

APPENDIX C: EVALUATION INSTRUMENTS

APPENDIX A

THE PARTICIPANTS

James F. Acord

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Albert W. Dahlberg

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Madison Heights, Mich. 48071

Lamphere High School
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Madison Heights, Mich. 48071

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Santa Maria, Calif. 93454

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Fairmont Senior High School
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Salt Lake City, Utah 84117

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31/32/33

APPENDIX C- 1

EVALUATION INSTRUMENTS:

REACTION TO THE NDEA PROGRAM

Directions: As I have previously indicated it is necessary for the staff to provide an opportunity for the participants to react to the functioning of the program. I hope each of you will take a few minutes to assist with this task by completing this form. Please check the categories below using 5 as an outstanding rating and 1 as being poor.

Orientation	5	4	3	2	1
Notification of Institute					
Answering of Correspondence					
Handling of Administrative Details.					
Orientation Session					
General Welcome					
Program Outline					
Staff Introductions					
Opportunity to get acquainted . .					

Comments: _____

_____

_____

Organization	5	4	3	2	1
Basic Organizational Structures . .					
Procedures for Handling Details . .					
General Operation of Institute. . .					
General Setting and Atmosphere. . .					
Interest of the Staff.					

Comments: _____

_____

_____

Outside Activities	5	4	3	2	1
1) Guest Speakers					
Tom McMaster.					
Tom Burford					

Comments: _____

_____

_____

2) Field Trips	5	4	3	2	1
Ford Sterling.					

Comments: _____

_____

_____

Other Comments

_____

_____

_____

APPENDIX C- 2

EVALUATION INSTRUMENTS:

MIDTERM REACTION TO THE NDEA PROGRAM

Directions: Once again I would like each of you to react to the overall progress of our Institute. Please check the categories below using 5 as an outstanding rating and 1 as being poor.

General Organization

	5	4	3	2	1
Basic Organizational Structure . .					
Procedures for Handling Details. .					
General Operation of the Institute					
General Setting and Atmosphere . .					
Interest of the Staff					

Comments: _____

_____

_____

Technical Instruction

	5	4	3	2	1
Quality of Instruction					
Type of Presentation					
Opportunity for Laboratory Work .					
Areas of Content Covered					

Comments: _____

_____

_____

Professional Instruction

	5	4	3	2	1
Quality of Instruction					
Type of Presentation					
Applicability of Content					
Areas of Content Covered					

Comments: _____

_____

_____

Outside Activities

	5	4	3	2	1
1) Guest Speakers					
Charles Risher (Strategies & Models)					
Gerald Baysinger (Fluid Power). . .					
Stig Ralstrom (Dropouts).					
Max Covert (Employment.					
Opportunities)					

Comments: _____

_____

_____

	5	4	3	2	1
2) Field Trips					
Vickers A & E Center.					

Comments: _____

_____

_____

_____

Comments Concerning Work Load: _____

_____

_____

Other Comments: _____

_____

_____

_____

APPENDIX C- 3

EVALUATION INSTRUMENTS:

FINAL REACTION TO THE NDEA PROGRAM

Directions: This is the last formal reaction form to evaluate the overall progress of our Institute. Please check the categories below using 5 as an outstanding rating and 1 as being poor.

General Organization

	5	4	3	2	1
Basic Organizational Structure . .					
Procedures for Handling Details. .					
General Operation of the Institute					
Interest of the Staff					

Comments: _____

_____

_____

Technical Instruction

	5	4	3	2	1
Quality of Instruction					
Type of Presentation					
Opportunity for Laboratory Work.					
Areas of Content Covered					

Comments: _____

_____

_____

Professional Instruction

	5	4	3	2	1
Quality of Instruction					
Type of Presentation					
Applicability of Content					
Areas of Content Covered					

Comments: _____

_____

_____

Outside Activities

	5	4	3	2	1
1) Guest Speakers					
Al Ackerman (Pneumatics) . . .					
Paul DeVore (Eastern Mich.). .					
Leonard Gau (Fluids)					
Arthur Evans (Fluid Controls).					
Russell Henke (Instrumentation)					
Edward Konopka (TEAM).					

Comments: _____

_____

_____

	5	4	3	2	1
2) Field Trips					
Pontiac Motors					
Henry Ford Community College .					
Joseph Lamb Company.					
Ford Engine Plant.					
Detroit Diesel					

Comments: _____

_____

_____

Other Comments: _____

_____

_____